

## COMPOUND SEMICONDUCTOR CRYSTAL GROWTH AND COMPOUND SEMICONDUCTOR DEVICE

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### Abstract

**PURPOSE:** To produce a compound semiconductor layer having hetero interfaces so as to acquire such steep hetero interfaces as to have a precision of monatomic layer, by feeding, using the atomic layer epitaxy technique, a semiconductor substrate with the feedstocks of elements constituting the title compound semiconductor in high flow rate at low-growth temperature and low-growth pressure.

**CONSTITUTION:** Using the atomic layer epitaxy technique, a semiconductor substrate is alternately fed with the feedstocks of elements constituting the objective compound semiconductor to effect monatomic layer growth of the superlattice structure layer of  $(\text{GaAs})_m(\text{GaP})_n$ ,  $(\text{GaAs})_m(\text{GaAsP})_n$ ,  $(\text{GaAsP})_m(\text{GaP})_n$  or  $(\text{GaAs})_l(\text{GaAsP})_m(\text{GaP})_n$  ( $l$ ,  $m$  and  $n$  are each positive integer). It is preferable that the feedstocks for Ga, As and P be trimethylgallium, arsine and phosphine, respectively, and said semiconductor substrate be fed with the trimethylgallium in high flow speed at low-growth temperature and pressure to effect monatomic layer growth through decomposition reaction on said substrate's surface.